

Calibration Data
Work SheetSchool _____ Class _____ Date _____
Student Group _____**DISSOLVED OXYGEN**

Temperature of distilled water _____ °C Elevation of site _____ meters

Dissolved Oxygen for the shaken distilled water

Observer #1	Observer #2	Observer #3
mg/L	mg/L	mg/L

Average = _____ mg/L

Solubility of Oxygen in Water for your temperature at sea level from Table	Calibration Value for your elevation from Table	Expected Value for DO in your distilled water
mg/L	X	=mg/L

Kit manufacturer and model _____

ALKALINITY for Baking Soda Standard

For kits that read alkalinity directly

Observer #1	Observer #2	Observer #3
mg/L as CaCO ₃	mg/L as CaCO ₃	mg/L as CaCO ₃

Average = _____ mg/L as CaCO₃

Hach kits or other kits in which drops are counted

	Observer #1	Observer #2	Observer #3	Average
Number of Drops				
Conversion Constant for your kit and procedure	X	X	X	X
Total Alkalinity (mg/L as CaCO ₃)	=mg/L	=mg/L	=mg/L	=mg/L

Kit manufacturer and model _____

NITRATE

Observer #1	Observer #2	Observer #3
mg/L NO ₃ ⁻ - N	mg/L NO ₃ ⁻ - N	mg/L NO ₃ ⁻ - N

Average = _____ mg/L NO₃⁻ - N

Kit manufacturer and model _____

Water Quality
Supplement 5.11**Data**
Work Sheet

School _____ Class _____ Date _____

Student Group _____

Site Name _____ Long. _____ Lat. _____

Sample collection date _____ Time _____ (hours/minutes) Lab ____ OR Field ____

WATER TEMPERATURE

Observer #1	Observer #2	Observer #3
_____ °C	_____ °C	_____ °C

Average = _____ °C

DISSOLVED OXYGEN

Observer #1	Observer #2	Observer #3
_____ mg/L	_____ mg/L	_____ mg/L

Average = _____ mg/L

Kit manufacturer and model _____

pH

Measurement method: _____ pen _____ meter

Value of buffers at site: pH 4 _____ pH 7 _____ pH 10 _____

Observer #1	Observer #2	Observer #3
_____	_____	_____

Average = _____

CONDUCTIVITY

Conductivity Standard: _____ MicoSiemens/cm (μS/cm)

Observer #1	Observer #2	Observer #3
_____ μS/cm	_____ μS/cm	_____ μS/cm

Average = _____ μS/cm

ALKALINITY

For kits that read alkalinity directly

Observer #1	Observer #2	Observer #3
mg/L as CaCO_3	mg/L as CaCO_3	mg/L as CaCO_3

Average = _____ mg/L as CaCO_3

For Hach kits or other kits in which drops are counted

	Observer #1	Observer #2	Observer #3
Number of Drops			
Conversion Constant for your kit and procedure	X	X	X
Total Alkalinity (mg/L as CaCO_3)	= _____ mg/L	= _____ mg/L	= _____ mg/L

Kit manufacturer and model _____

NITRATEObserver #1: _____ mg/L $\text{NO}_3^- - \text{N} = \text{NO}_2^- - \text{N}$ _____ mg/L $\text{NO}_2^- - \text{N}$ Observer #2: _____ mg/L $\text{NO}_3^- - \text{N} = \text{NO}_2^- - \text{N}$ _____ mg/L $\text{NO}_2^- - \text{N}$ Observer #3: _____ mg/L $\text{NO}_3^- - \text{N} = \text{NO}_2^- - \text{N}$ _____ mg/L $\text{NO}_2^- - \text{N}$ Average = _____ mg/L $\text{NO}_3^- - \text{N} = \text{NO}_2^- - \text{N}$ _____ mg/L $\text{NO}_2^- - \text{N}$

Kit manufacturer and model _____

Solubility of Oxygen in Water

Table

Exposed to Air at 750mm Hg Pressure

TEMP °C	Solubility mg/L	TEMP °C	Solubility mg/L	TEMP °C	Solubility mg/L
0	14.6	16	9.9	32	7.3
1	14.2	17	9.7	33	7.2
2	13.8	18	9.5	34	7.1
3	13.5	19	9.3	35	7.0
4	13.1	20	9.1	36	6.8
5	12.8	21	8.9	37	6.7
6	12.5	22	8.7	38	6.6
7	12.1	23	8.6	39	6.5
8	11.9	24	8.4	40	6.4
9	11.6	25	8.3	41	6.3
10	11.3	26	8.1	42	6.2
11	11.0	27	8.0	43	6.1
12	10.8	28	7.8	44	6.0
13	10.5	29	7.7	45	5.9
14	10.3	30	7.6	46	5.8
15	10.1	31	7.4	47	5.7

Calibration Values

Table

For Various Atmospheric Pressures and Altitudes

Pressure	mm Hg	Pressure	kPa	Elevation m	Calibration Value %
	768		102.3	-84	1.01
	760		101.3	0	1
	752		100.3	85	0.99
	745		99.3	170	0.98
	787		98.8	256	0.97
	730		97.3	343	0.96
	722		96.3	431	0.95
	714		95.2	519	0.94
	707		94.2	608	0.93
	699		93.2	698	0.92
	692		92.2	789	0.91
	684		91.2	880	0.9
	676		90.2	972	0.89
	669		89.2	1066	0.88
	661		88.2	1160	0.87
	654		87.1	1254	0.86
	646		86.1	1350	0.85
	638		85.1	1447	0.84
	631		84.1	1544	0.83
	623		83.1	1643	0.82
	616		82.1	1743	0.81
	608		81.1	1843	0.8
	600		80	1945	0.79
	593		79	2047	0.78
	585		78	2151	0.77
	578		77	2256	0.76
	570		76	2362	0.75
	562		75	2469	0.74
	555		74	2577	0.73
	547		73	2687	0.72
	540		71.9	2797	0.71
	532		70.9	2909	0.7
	524		69.6	3203	0.69
	517		68.9	3137	0.68
	509		67.9	3253	0.67
	502		66.9	3371	0.66

Look at the Calibration Value Table corresponding to your elevation in meters and record it on the Calibration Data Work Sheet.

Example

An elevation of 1,544 meters has a corresponding saturation calibration value of 0.83.

Multiply the solubility of oxygen found in the second step by the calibration found in the third step. Example: At an altitude of 1,544 meters and a temperature of 22°C, you multiply $(8.74 \text{ mg/L}) \times (0.83) = 7.25$.

This value (7.25 in the example) is your expected value for a shaken, distilled water standard.

Compare this value to the value for DO that you found when you tested your shaken, distilled water standard. If the value is not within 0.4mg/L (LaMotte kit) or 1mg/L (Hach kit), try the measurement again on the distilled water. If it is still off, but by less than 1mg/L, record the DO value on the Calibration Data Work Sheet.

If you get a difference of more than 1mg/L, report the value you get and replace the chemicals in your test kit before making any more measurements. Recalibrate when you get fresh chemicals.